

Ethanol Trade Development as Part of APEC's Renewable Strategy

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U.S. GRAINS
COUNCIL



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A world map with a light blue background and green landmasses. Numerous red and yellow location pins are scattered across the map, indicating various international markets. The pins are concentrated in North America, Europe, Africa, and Asia.

About the U.S. Grains Council

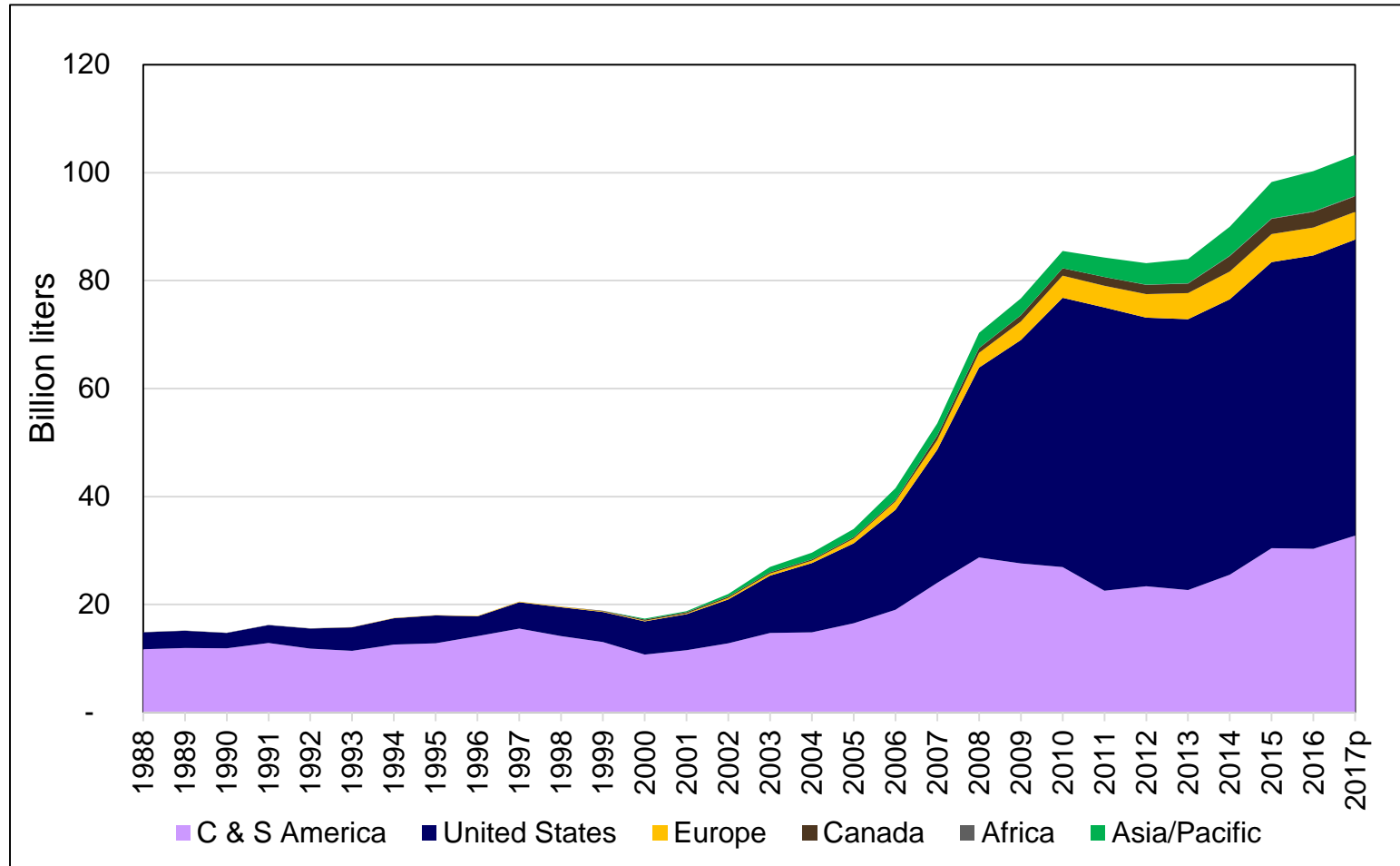
The U.S. Grains Council develops export markets for U.S. barley, corn, sorghum and related products including distiller's dried grains with solubles (DDGS) and ethanol. With full-time presence in 13 key markets and representatives in an additional 15 locations, the Council operates programs in more than 50 economies and the European Union. The Council believes exports are vital to global economic development and to U.S. agriculture's profitability.

Four factors will continue to drive the use of ethanol and the development of new or expanded ethanol policies globally



	Factors initially driving global ethanol policies	Factors now: similar, more focus on GHG and economics
Feedstock/agricultural producers	Feedstocks are a major (75%) component of production, and overall labor and GDP contribution	China – NDRC announced move to E10, major impact on current stocks and future production
Complementary industries	Storage infrastructure, transportation networks, initial plant installation, R&D, → rural jobs	Rural economic impacts
Environmental and human health benefits	Improving air quality and addressing other environmental concerns	Paris Agreement commitments – GHG emissions reductions
Consumers and profitability	Cost benefits to consumers	Octane economics – cost competitive against aromatics, with benefits to consumers & companies

More than 60 economies have ethanol policies, global production has surpassed 100 billion liters



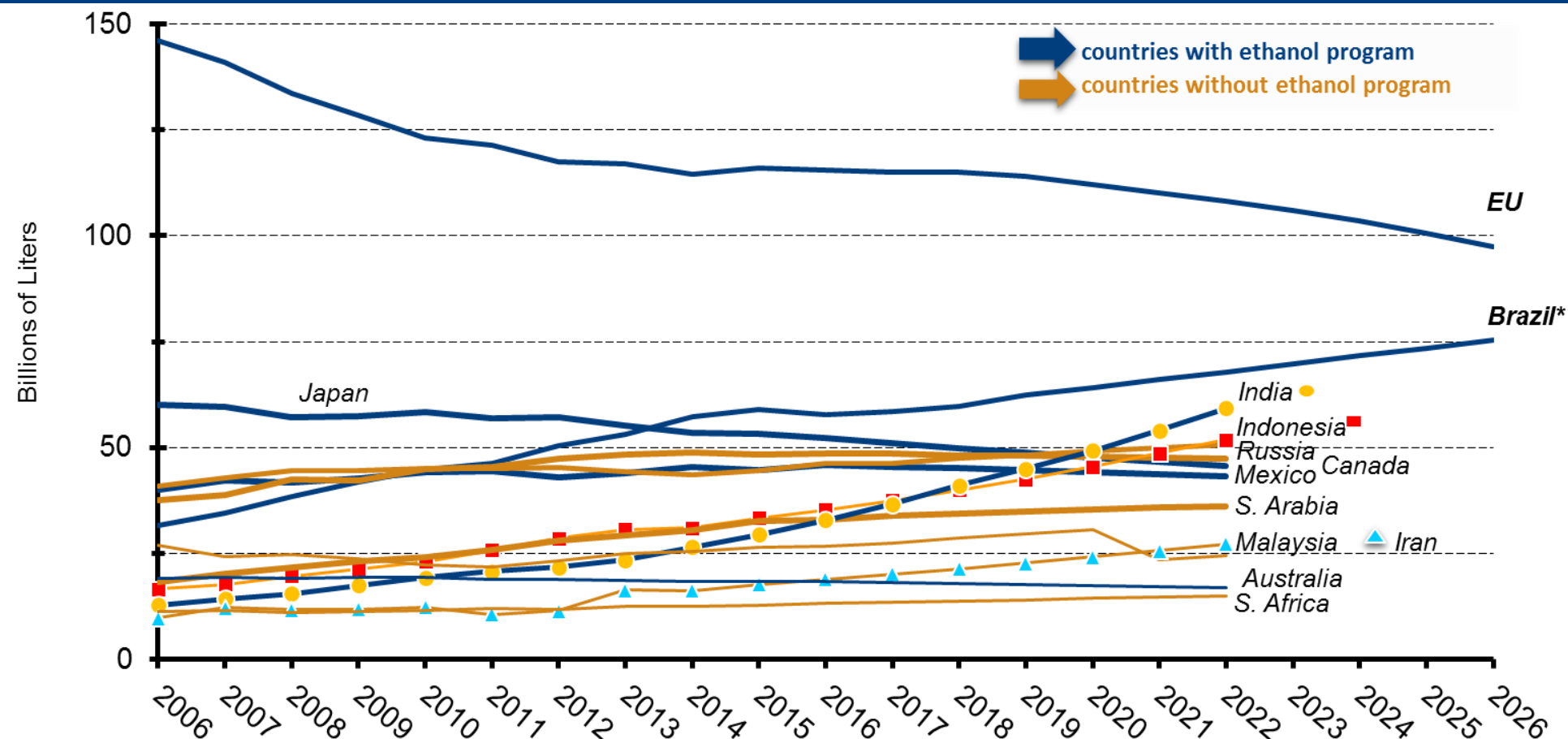
Source: U.S. Energy Information Administration & USDA/FAS Office of Global Analysis Projections

APEC growth potential

- China – nationwide E10
 - 2020, 18 billion liters
 - +14 billion liters
- United States – E10+
- New and expanding policies
 - Canada, Mexico, China, Vietnam, Indonesia, Russia(?)
- Replacing oxygenates?
 - Chinese Taipei, Chile, South Korea, Mexico
- **Supported by trade**

Top 15 Largest Gasoline Markets

(excluding United States, 545 billion liters and China, 190 billion liters – in 2018)

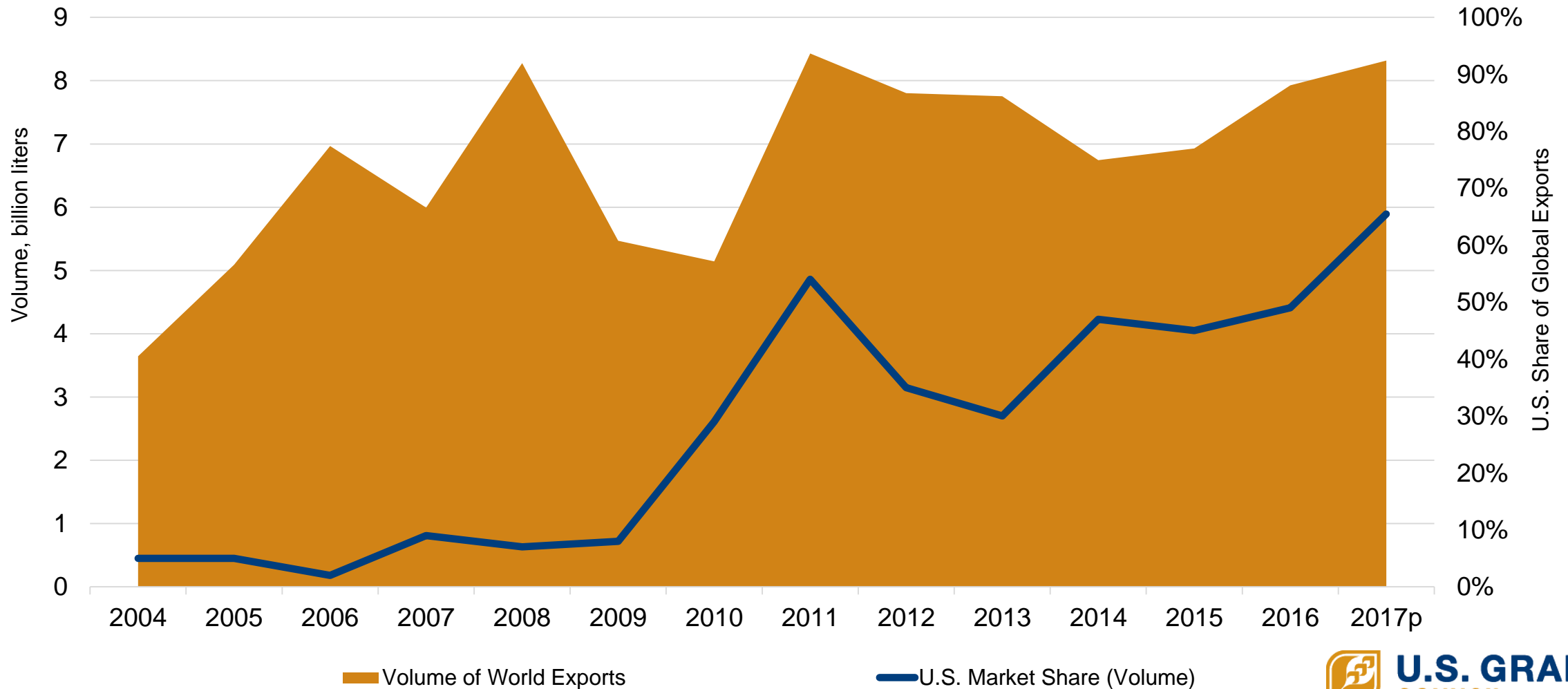


Note: * Includes Gasoline C (which included anhydrous) plus hydrous.

Source: Int'l Energy Agency (IEA), Paris ; 2017 Projections thru 2022 based on Brent \$61.5/bbl by 2022; extended to 2026 by OECD biofuels staff.

2017 Global ethanol trade reaches 8.3 billion liters

U.S. share of world exports expands to 65%



Source: Global Agricultural Trade System (UN Trade Data subset) and Global Trade Atlas, U.S. Grains Council – projections (p)

In global trade, major producers and exporters are also importers – policy with a role for trade is critical



Major exporters – economies with sufficient feedstock

- United States – 5.2 bln liters
 - Brazil, Canada, India, Philippines, South Korea
- Brazil – 1.4 bln liters
 - U.S., South Korea, Japan, EU
- Pakistan – 450 mln liters
 - Japan, South Korea, EU, Taiwan
- India – 140 mln liters

Major importers – policies with a role for trade

- Brazil
- Canada
- United States
- Japan
- Philippines
- India

EWG12-2015A

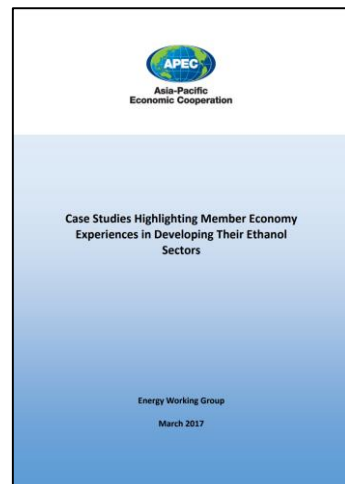
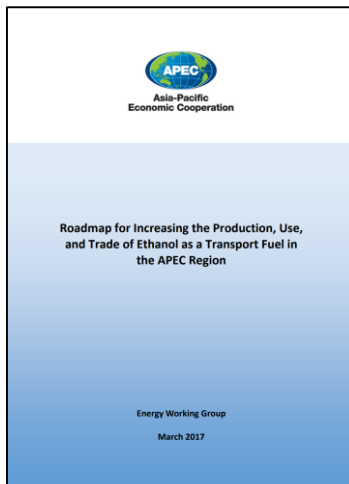
Ethanol Trade Development as Part of APEC's Renewable Fuel Strategy

Roadmap for best practices in developing an ethanol policy – benefits and policy tools

- Reduced GHG emissions, improved air quality, economic advantages
- Mandates, incentives & compliance, administration, role for trade

Case studies for member economy experiences in developing domestic ethanol sectors

- Canada, Peru, Philippines, Thailand, United States



Industry innovation – co-products key to profitability and GHG reductions

Co-products, on average per bushel of corn

Ethanol

- 10.9 liters

Distillers dried grains

- 7.4 kilograms

Corn oil

- 0.34 kilograms

CO₂

- 7.5 kilograms

End use

Fuel and industrial applications

Feed

Feed, biodiesel, and industrial applications

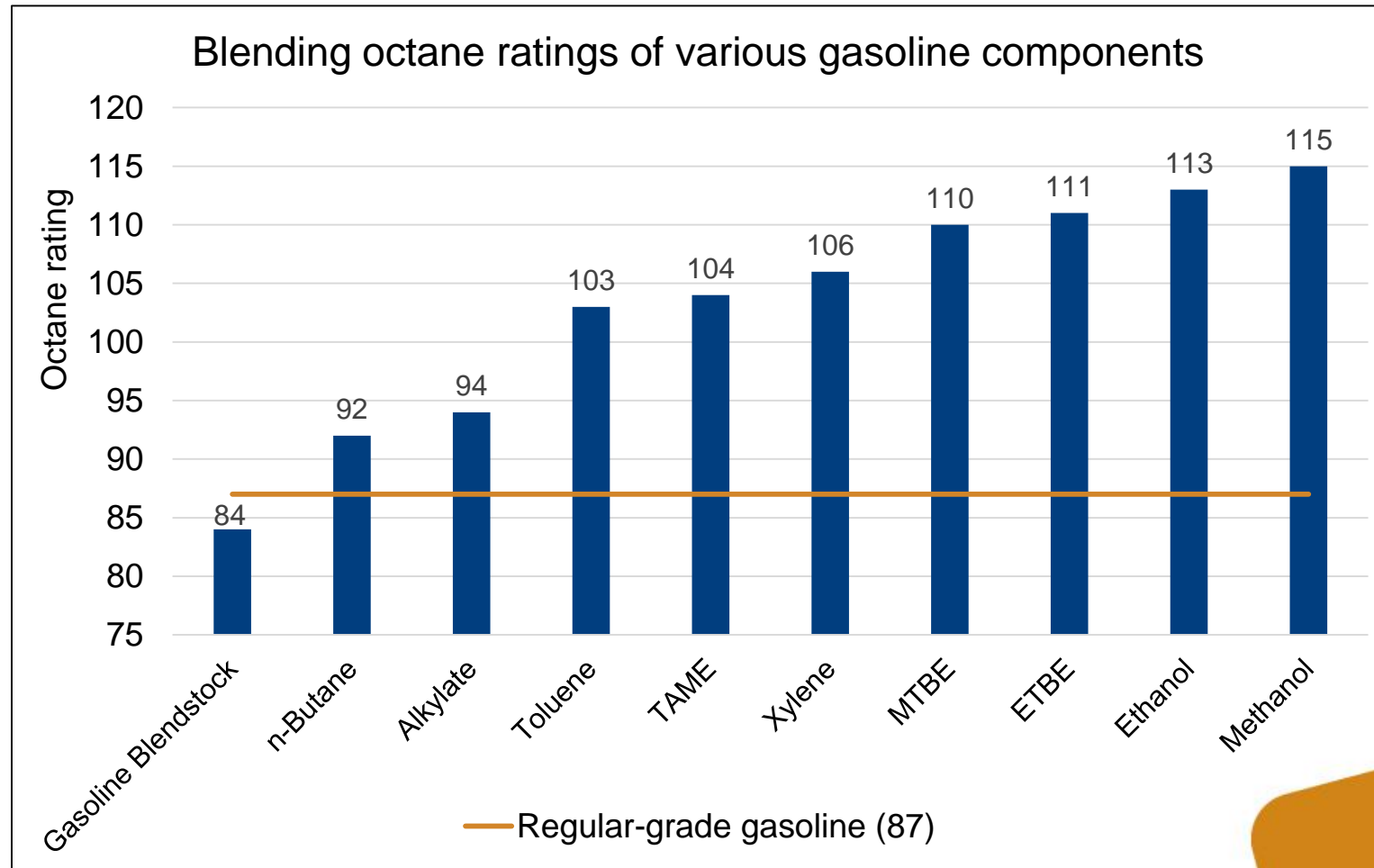
Beverages, dry ice, and industrial applications

Co-products and GHG emissions reductions

According to USDA, U.S. corn ethanol reduces emissions by 43% over conventional gasoline, expected to exceed 50% by 2022. Many individual plants exceed 55% GHG reductions

Source: Renewable Fuels Association

Oxygenation requirements, phase out of MTBE, and value of octane boost demand for ethanol in the U.S. and globally

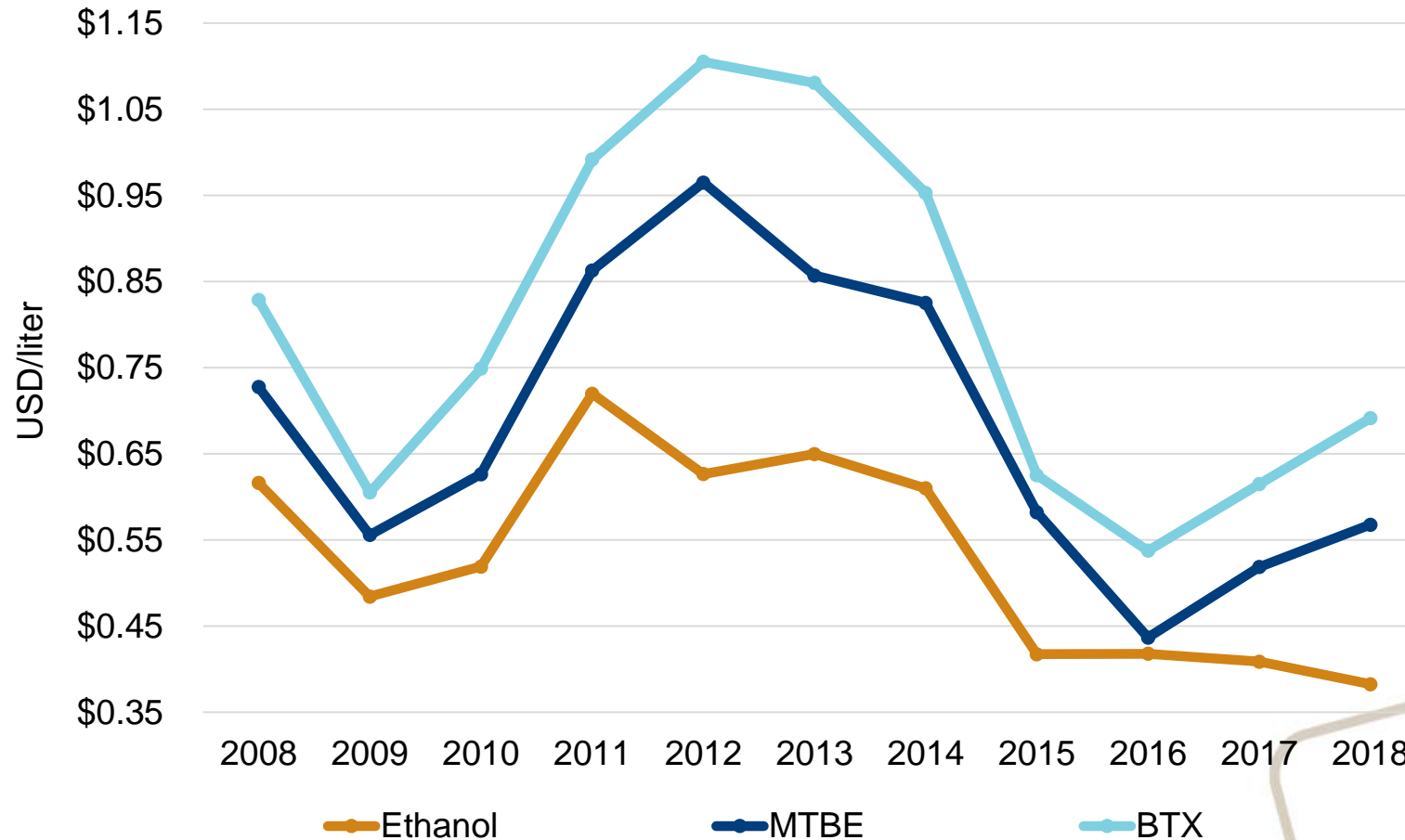


Source: U.S. Department of Energy and ethanol industry

Ethanol is cheapest source of octane over the last decade, holding significant economic advantages



Average Price Comparison



Source: U.S. Grains Council



APEC roadmap used in market development efforts globally

EWG 12-2015A project timeline and next steps

- April 2016 – First workshop held in Taichung City, Chinese Taipei, 14 economies participated
- March 2017 – Presented roadmap and case studies to APEC member economies and received approval to publish
- May 2017 – EWG Meeting in Jeju, Korea
- October 2017 – Ethanol Summit of the Americas – Dr. Chern, Lead Shepard for EWG, presents the roadmap to 15 economies in the Western Hemisphere in Houston, Texas
- March 2018 – Project update at EGNRET 50
- May 2018 – Ethanol Summit of the Asia-Pacific, held in Minneapolis, Minnesota
- July 2018 – Energy access workshop in Jakarta, Indonesia
- 2019 – EWG Ministerial in Chile

Our goal is to develop global biofuels alliances

The U.S. ethanol industry is working with interested economies to avoid false starts in policy development and to share best practices in expanding the global use of ethanol

- **Focus on working with industry and government** to develop proven policy supports, including enforced blending mandates and/or tax incentives
- **Highlight benefits to society** that result from biofuels blending – GHG emissions reductions, improved air quality, and economic advantages throughout the entire value chain
- **The critical role of trade** that guarantees consistent supply as the domestic industry is developed or in an unfavorable feedstock environment
- **Support offered** through bilateral working groups, trade missions, reverse trade missions, technical and policy workshops, and a global alliance

Interested to learn more about
building global biofuels
alliances:

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